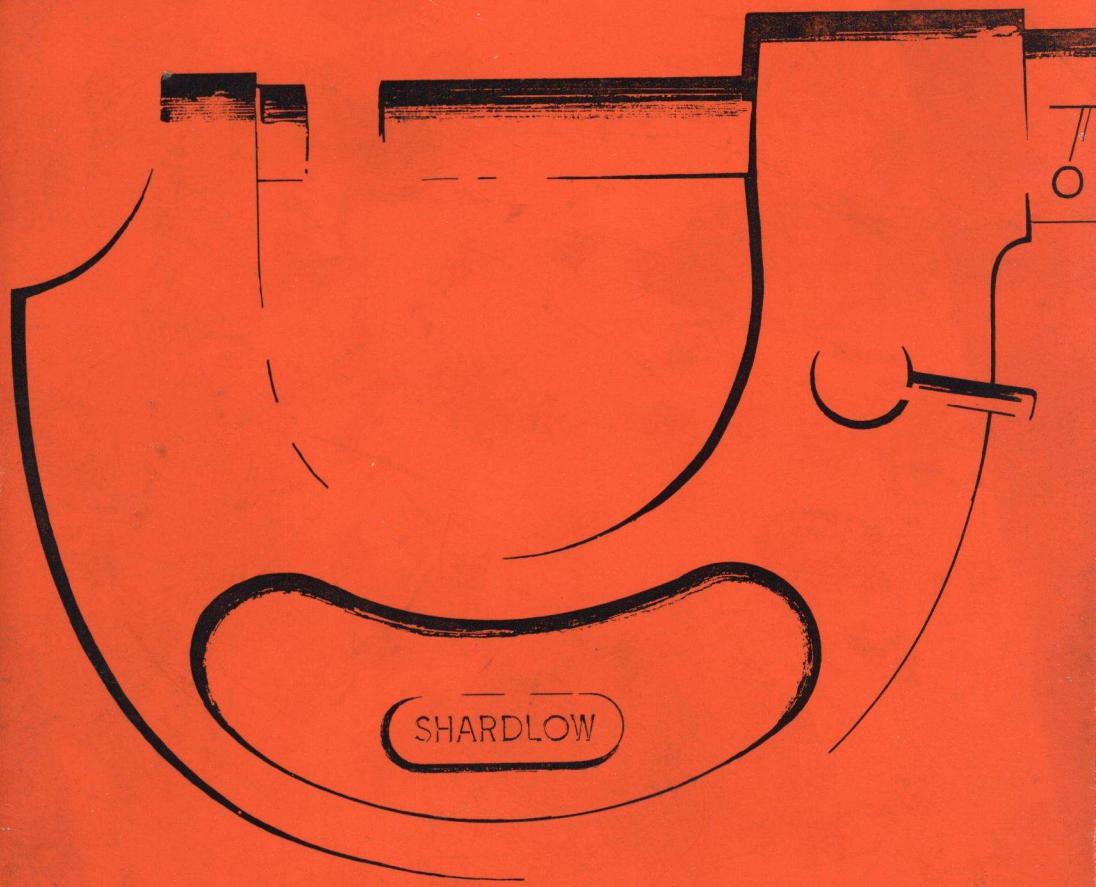


SHARDLOW MICROMETERS

PRECISION
MEASURING INSTRUMENTS



SHARDLOW

STANDARDS ROOM STANDARDS

ON THE SHOP FLOOR



Screws are
thread ground
in surroundings
maintained
at 68°F.

Time was when you made a trip to your Standards Room for a final decision on a component measurement. Today more and more engineers are discovering that when you really have to take a measurement 'for sure' it's just as reliable, and considerably quicker, to ask 'Has anyone in the shop got a Shardlow?'

Shardlow micrometers are built to an exceptional standard of accuracy—and constructed ruggedly to maintain that accuracy. And they are a real pleasure to use. Next time you pass your local tool shop call in and ask to see a Shardlow micrometer. Get the 'feel' of it in your hand. Compare it with other makes. You'll see that every feature is designed for easy, accurate, rapid reading: correct proportions for good balancing; new sleeve design with staggered inclined lines for precise readability; black figures on matt chrome for clear reading in any light.

Many engineering achievements could well carry the words 'Precision by Shardlow' for an increasing number of engineers rely on Shardlow instruments to uphold their reputation for accuracy. Many older engineers still swear by instruments made up to forty years ago by our parent company, Ambrose Shardlow & Co Ltd.

Produced in a modern factory, Shardlow micrometers have, since 1953, been made by Shardlow Micrometers Ltd, a vigorous self-supporting organisation.

Shardlow micrometers embody all that craftsmanship and constant development can give them—both in design and performance.

This leaflet shows part of the comprehensive range of Shardlow precision measuring instruments. Many more instruments are available while a special design service will produce the particular instrument to answer your needs.

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EXTERNAL MICROMETERS

Capacity 0-1" (0-25 mm.)

Shardlow English reading micrometers offer the extra precision of reading to 0.0005" at no extra cost.

All 1" (25 mm.) micrometers have a cutaway frame to assist measurement in awkward conditions and are supplied in cases complete with adjusting keys. Sleeves and thimbles are matt chrome plated. Decimal equivalents are engraved on all English thimbles.

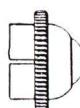
The micrometer shown features oblique markings on the sleeve to prevent misreadings of .025" (or 5 mm.).



No. 299 : .250" ball diameter

No. 299M: 6.5 mm.

Ball anvil attachment



This attachment is easily fitted to 1" (25 mm.) micrometers and enables these instruments to be used for measuring tube walls. The ball diameter must be subtracted from the actual readings obtained.

EXTERNAL MICROMETERS

1" (25 mm.) measuring range

Range 0-1" has a bow shaped frame.

Ranges 1-12" have square shaped frames.

Ranges over 12" have bow shaped alloy frames.

All micrometers are fitted with ratchet stops and locknuts. Sleeves and thimbles are matt chrome plated. Micrometers over 1" supplied in wooden case complete with adjusting key.

ENGLISH:

.0005" graduations

| Cat. No. | Capacity | Cat. No. | Capacity |
|----------|--------------------|----------|-------------|
| 4 | 0- $\frac{1}{2}$ " | 4M | 0- 13 mm. |
| 50 | 0- 1" | 50M | 0- 25 mm. |
| 51 | 1- 2" | 51M | 25- 50 mm. |
| 52 | 2- 3" | 52M | 50- 75 mm. |
| 53 | 3- 4" | 53M | 75-100 mm. |
| 54 | 4- 5" | 54M | 100-125 mm. |
| 55 | 5- 6" | 55M | 125-150 mm. |
| 56 | 6- 7" | 56M | 150-175 mm. |
| 57 | 7- 8" | 57M | 175-200 mm. |
| 58 | 8- 9" | 58M | 200-225 mm. |
| 59 | 9-10" | 59M | 225-250 mm. |
| 60 | 10-11" | 60M | 250-275 mm. |
| 61 | 11-12" | 61M | 275-300 mm. |
| 62 | 12-13" | 62M | 300-325 mm. |
| 63 | 13-14" | 63M | 325-350 mm. |
| 64 | 14-15" | 64M | 350-375 mm. |
| 65 | 15-16" | 65M | 375-400 mm. |
| 66 | 16-17" | 66M | 400-425 mm. |
| 67 | 17-18" | 67M | 425-450 mm. |
| 68 | 18-19" | 68M | 450-475 mm. |
| 69 | 19-20" | 69M | 475-500 mm. |
| 70 | 20-21" | 70M | 500-525 mm. |
| 71 | 21-22" | 71M | 525-550 mm. |
| 72 | 22-23" | 72M | 550-575 mm. |
| 73 | 23-24" | 73M | 575-600 mm. |

We recommend the purchase of a reference rod with each instrument to check the setting periodically.

When ordering add R to the catalogue No.

English calibrations can be supplied to read to .0001" at extra cost. Add V to the catalogue No.

Micrometers can be supplied with tungsten carbide tips at extra cost. Add T before catalogue No.

Micrometers up to 12" capacity can be supplied with a check reading thimble at extra cost.

Add C to catalogue No.



EXTERNAL MICROMETERS

Matt chrome plated

Fitted with ratchet stop and locknut.

English calibrations can be supplied to read to
·0001" at extra cost. Add V to the catalogue No.

ENGLISH: ·0005" graduations

| Cat. No. | Capacity |
|----------|----------|
| 1 | 0-1" |
| 2 | 1-2" |
| 3 | 2-3" |

METRIC: ·01 mm. graduations

| Cat. No. | Capacity |
|----------|-----------|
| 1M | 0-25 mm. |
| 2M | 25-50 mm. |
| 3M | 50-75 mm. |



EXTERNAL MICROMETERS

Tungsten tips

The following micrometers can be fitted with tungsten carbide tips at extra cost:

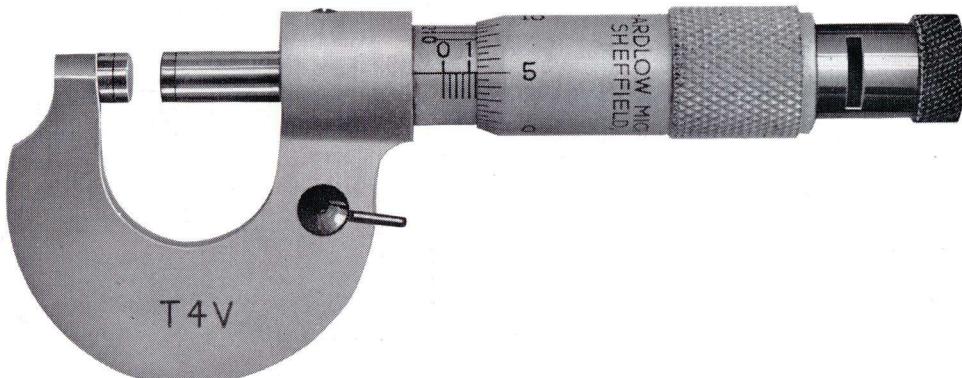
Standard flat anvil micrometers.

Point anvil and spindle micrometers.

Spline anvil and spindle micrometers.

Ball ended micrometers.

When ordering micrometers with tungsten tips add T before the catalogue No.



REFERENCE MEASURING RODS

We recommend the purchase of a reference measuring rod with each external micrometer so that the setting may be periodically checked. The 1" and 25 mm. standards are in the form of a disc. 2" up to 16" (50 mm. up to 400 mm.) are made as $\frac{5}{16}$ " diameter rods. Above 16" (400 mm.) the diameter is $\frac{3}{8}$ ".



Measuring rods are of non-shrinking steel, hardened and spherically lapped on the ends and fitted with heat insulating sleeves to prevent expansion when held in the hand. They conform to B.S. 870. Measuring rods over 24" (600 mm.) and measuring rods over 2" (50 mm.) with flat ends will be supplied on request.

| Cat. No. | Size | Cat. No. | Size |
|----------|------|----------|---------|
| 125/1 | 1" | 125/1M | 25 mm. |
| 125/2 | 2" | 125/2M | 50 mm. |
| 125/3 | 3" | 125/3M | 75 mm. |
| 125/4 | 4" | 125/4M | 100 mm. |
| 125/5 | 5" | 125/5M | 125 mm. |
| 125/6 | 6" | 125/6M | 150 mm. |
| 125/7 | 7" | 125/7M | 175 mm. |
| 125/8 | 8" | 125/8M | 200 mm. |
| 125/9 | 9" | 125/9M | 225 mm. |
| 125/10 | 10" | 125/10M | 250 mm. |
| 125/11 | 11" | 125/11M | 275 mm. |
| 125/12 | 12" | 125/12M | 300 mm. |
| 125/13 | 13" | 125/13M | 325 mm. |
| 125/14 | 14" | 125/14M | 350 mm. |
| 125/15 | 15" | 125/15M | 375 mm. |
| 125/16 | 16" | 125/16M | 400 mm. |
| 125/17 | 17" | 125/17M | 425 mm. |
| 125/18 | 18" | 125/18M | 450 mm. |
| 125/19 | 19" | 125/19M | 475 mm. |
| 125/20 | 20" | 125/20M | 500 mm. |
| 125/21 | 21" | 125/21M | 525 mm. |
| 125/22 | 22" | 125/22M | 550 mm. |
| 125/23 | 23" | 125/23M | 575 mm. |
| 125/24 | 24" | 125/24M | 600 mm. |

EXTERNAL MICROMETER SETS

Comprising 3, 6, 12 or 24 instruments, these sets are complete with reference disc and radial ended reference measuring rods in a polished oak case with lock and key.

Each instrument is fitted with ratchet stop and locknut. The graduated parts have a matt chrome finish for easier reading. 250 and 250M are supplied with matt chrome frames.

250, 251, 252, 250M, 251M and 252M are supplied in flat cases. 253, 254, 253M and 254M are supplied in upright cases. 255 and 255M are supplied in an oak drawer cabinet.

ENGLISH:

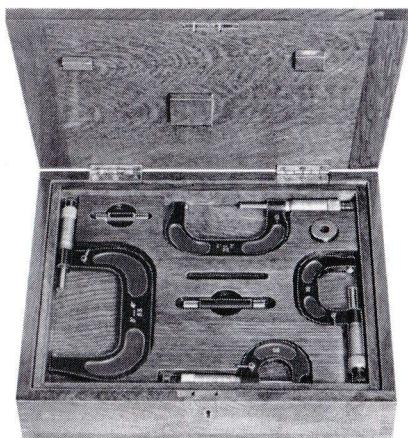
·0005" graduations

| Cat. No. | Capacity |
|----------|----------|
| 250 | 0- 3" |
| 251 | 0- 3" |
| 252 | 0- 6" |
| 253 | 6-12" |
| 254 | 0-12" |
| 255 | 0-24" |

METRIC:

·01 mm. graduations

| Cat. No. | Capacity |
|----------|-------------|
| 250M | 0- 75 mm. |
| 251M | 0- 75 mm. |
| 252M | 0-150 mm. |
| 253M | 150-300 mm. |
| 254M | 0-300 mm. |
| 255M | 0-600 mm. |



English calibrations to read ·0001" supplied at extra cost; add V to the catalogue No. when ordering. All sets except 255 and 255M supplied with check reading thimble at extra cost; add C to catalogue No. All sets supplied with tungsten carbide tips at extra cost; add T before catalogue No.

external interchangeable ANVIL MICROMETERS

Capacities from 0-12"

ENGLISH: .0005" graduations

| Cat. No. | Capacity |
|----------|----------|
| 300 | 0-2" |
| 301 | 0-4" |
| 302 | 0-6" |
| 303 | 2- 6" |
| 304 | 4- 8" |
| 305 | 6-12" |
| 306 | 8-12" |

METRIC: .01 mm. graduations

| Cat. No. | Capacity |
|----------|-------------|
| 300M | 0- 50 mm. |
| 301M | 0-100 mm. |
| 302M | 0-150 mm. |
| 303M | 50-150 mm. |
| 304M | 100-200 mm. |
| 305M | 150-300 mm. |
| 306M | 200-300 mm. |

Each micrometer, fitted with ratchet stop and locknut and complete with a set of reference rods, is supplied in a wooden case.

These micrometers have square shaped frames. The interchangeable anvils are easily fitted and held in position by a knurled nut. The anvils are accurately positioned and each has an adjustment for wear. Adjustment can be made from the anvil end while retaining parallelism of the anvil and spindle faces.



external interchangeable ANVIL MICROMETERS

Capacities from 12 to 42"

ENGLISH: .0005" graduations

| Cat. No. | Capacity |
|----------|----------|
| 307 | 12-16" |
| 308 | 16-20" |
| 309 | 20-24" |
| 310 | 24-30" |
| 311 | 30-36" |
| 312 | 36-42" |

METRIC: .01 mm. graduations

| Cat. No. | Capacity |
|----------|--------------|
| 307M | 300- 400 mm. |
| 308M | 400- 500 mm. |
| 309M | 500- 600 mm. |
| 310M | 600- 750 mm. |
| 311M | 750- 900 mm. |
| 312M | 900-1050 mm. |

Each micrometer, fitted with ratchet stop and locknut and complete with a set of reference rods, is supplied in a wooden case.

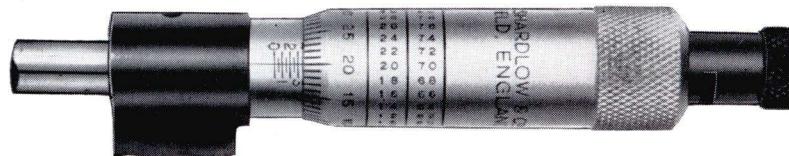
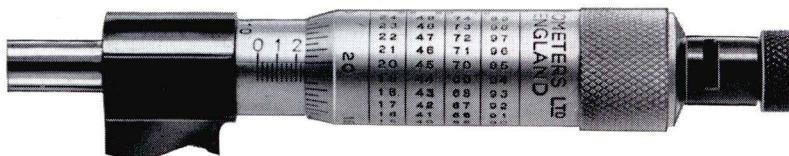
These micrometers have bow shaped alloy frames conforming to B.S. 870 for flexure of frame. A $\frac{15}{16}$ " diameter thimble is fitted for easy reading. The interchangeable anvils are easily fitted and held in position by a knurled nut. The anvils are accurately positioned and each has an adjustment for wear. Adjustment can be made from the anvil end while retaining parallelism of the anvil and spindle faces.



EXTERNAL MICROMETERS

Check reading thimbles

The Shardlow check reading thimble is designed for quickness of operation. Removing the need for even the simple arithmetic required to use a micrometer, the check reading thimble checks at a glance the measurement being taken. Thimbles are available for both English and Metric instruments.



EXTERNAL MICROMETERS

Large thimbles

Any standard external micrometer 1" and over can be supplied with a $\frac{3}{4}$ " diameter thimble, at extra cost. When ordering, add E before catalogue No.



SHARDLOW MICROMETERS

EXTERNAL MICROMETERS

with ball anvils

These tube-measuring micrometers are fitted with ratchet stops and locknuts.

These can be supplied with tungsten carbide tips at extra cost. Add T before catalogue No. when ordering. English calibrations can be supplied reading ·0001" at extra cost. Add V to catalogue No.



1B has a matt chrome frame.

ENGLISH:
·0005" graduations

| Cat. No. | Capacity |
|----------|--------------------|
| 50B | 0-1" |
| 1B | 0-1" |
| 5 | 0- $\frac{1}{2}$ " |

METRIC:
·01 mm. graduations

| Cat. No. | Capacity |
|----------|----------|
| 50MB | 0-25 mm. |
| 1MB | 0-25 mm. |
| 5M | 0-13 mm. |

EXTERNAL MICROMETERS

with ball anvils and spindles

Fitted with ratchet stops and locknuts.

Tungsten carbide tips can be supplied at extra cost. Add T before catalogue No. when ordering.

English calibrations can be supplied reading ·0001" at extra cost. Add V to catalogue No.



1L has a matt chrome frame.

ENGLISH:
·0005" graduations

| Cat. No. | Capacity |
|----------|--------------------|
| 50L | 0-1" |
| 1L | 0-1" |
| 8 | 0- $\frac{1}{2}$ " |

METRIC:
·01 mm. graduations

| Cat. No. | Capacity |
|----------|----------|
| 50ML | 0-25 mm. |
| 1ML | 0-25 mm. |
| 8M | 0-13 mm. |

EXTERNAL MICROMETERS

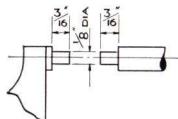
with spline anvils and spindles

Fitted with ratchet stops and locknuts.

Tungsten carbide tips can be supplied at extra cost.

Add T before catalogue No. when ordering.

English calibrations can be supplied reading ·0001" at extra cost. Add V to catalogue No.



50S to 52S have black frames.

1S to 3S have matt chrome frames.

ENGLISH: ·0005" graduations

| Cat. No. | Capacity |
|----------|----------|
| 50S | 0-·3" |
| 51S | 0-1" |
| 52S | 1-2" |
| 1S | 0-·3" |
| 2S | 0-1" |
| 3S | 1-2" |

METRIC: ·01 mm. graduations

| Cat. No. | Capacity |
|----------|-----------|
| 50MS | 0-19 mm. |
| 51MS | 0-25 mm. |
| 52MS | 25-50 mm. |
| 1MS | 0-19 mm. |
| 2MS | 0-25 mm. |
| 3MS | 25-50 mm. |

EXTERNAL MICROMETERS

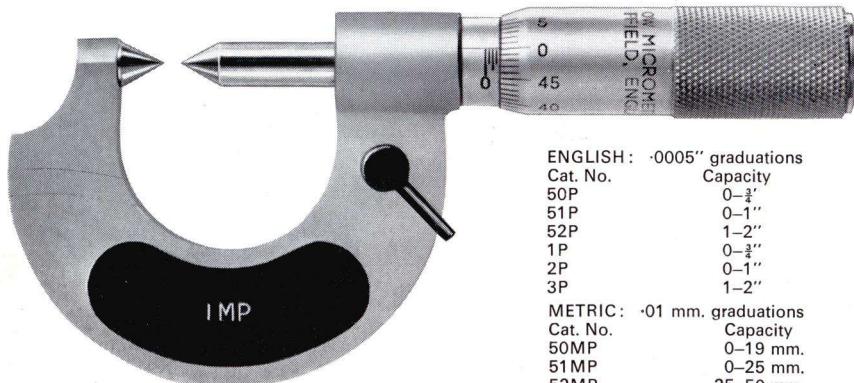
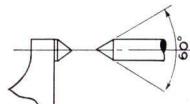
with point anvils and spindles

Fitted with locknuts.

Tungsten carbide tips can be supplied at extra cost.

Add T before catalogue No. when ordering.

English calibrations can be supplied reading ·0001" at extra cost. Add V to catalogue No.



50P to 52P have black frames.

1P to 3P have matt chrome frames.

ENGLISH: ·0005" graduations

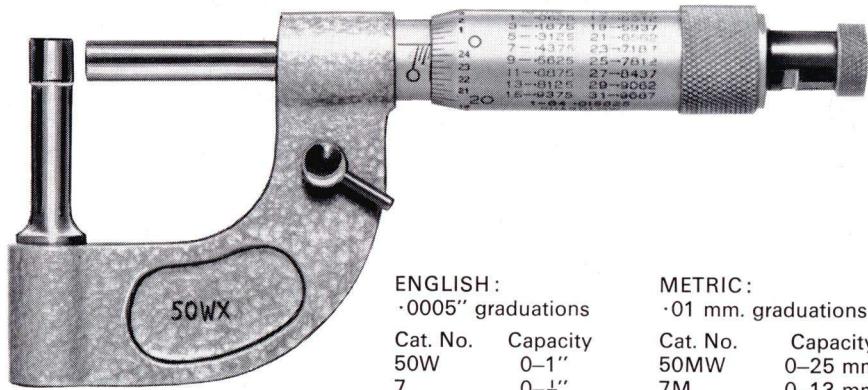
| Cat. No. | Capacity |
|----------|----------|
| 50P | 0-·3" |
| 51P | 0-1" |
| 52P | 1-2" |
| 1P | 0-·3" |
| 2P | 0-1" |
| 3P | 1-2" |

METRIC: ·01 mm. graduations

| Cat. No. | Capacity |
|----------|-----------|
| 50MP | 0-19 mm. |
| 51MP | 0-25 mm. |
| 52MP | 25-50 mm. |
| 1MP | 0-19 mm. |
| 2MP | 0-25 mm. |
| 3MP | 25-50 mm. |

EXTERNAL MICROMETERS with vertical anvils

These tube-measuring micrometers are fitted with ratchets and locknuts. 50W has a vertical anvil of 0.268" diameter. Anvil diameter of No. 7 is 0.203". English calibrations can be supplied reading .0001" at extra cost. Add V to catalogue No.



ENGLISH:
.0005" graduations

Cat. No. Capacity
50W 0-1"
7 0- $\frac{1}{2}"$

METRIC:
.01 mm. graduations

Cat. No. Capacity
50MW 0-25 mm.
7M 0-13 mm.

EXTERNAL MICROMETERS with disc anvils and spindles (paper micrometers)

These micrometers are fitted with ratchets and locknuts. 0-1" models have $\frac{1}{2}"$ diameter discs. 0- $\frac{1}{2}"$ models have $\frac{3}{8}"$ discs. English calibrations can be supplied to read to .0001" at extra cost. Add V to catalogue No.



ENGLISH:
.0005" graduations
Cat. No. Capacity
50D 0-1"
1D 0-1"
6 0- $\frac{1}{2}"$

METRIC:
.01 mm. graduations
Cat. No. Capacity
50MD 0-25 mm.
1MD 0-25 mm.
6M 0-13 mm.

1D has a matt chrome frame.

GEAR TOOTH MICROMETERS

fitted with ratchet stops and locknuts

English calibrations can be supplied reading .0001" at extra cost. Add V to catalogue No.

$\frac{3}{4}$ " diameter anvils

ENGLISH:

| Cat. No. | Capacity |
|----------|----------|
| 100 | 0-1" |
| 101 | 1-2" |
| 102 | 2-3" |
| 103 | 3-4" |
| 104 | 4-5" |
| 105 | 5-6" |

METRIC:

| Cat. No. | Capacity |
|----------|-------------|
| 100M | 0- 25 mm. |
| 101M | 25- 50 mm. |
| 102M | 50- 75 mm. |
| 103M | 75-100 mm. |
| 104M | 100-125 mm. |
| 105M | 125-150 mm. |

1" diameter anvils

ENGLISH:

| Cat. No. | Capacity |
|----------|----------|
| 110 | 0-1" |
| 111 | 1-2" |
| 112 | 2-3" |
| 113 | 3-4" |
| 114 | 4-5" |
| 115 | 5-6" |

METRIC:

| Cat. No. | Capacity |
|----------|-------------|
| 110M | 0- 25 mm. |
| 111M | 25- 50 mm. |
| 112M | 50- 75 mm. |
| 113M | 75-100 mm. |
| 114M | 100-125 mm. |
| 115M | 125-150 mm. |



ROLLING MILL MICROMETERS

These deep frame micrometers are supplied with ratchet stop and locknut unless otherwise ordered. Disc anvils and spindles, $\frac{1}{2}$ " diameter, can be supplied at extra cost. To order, add D to catalogue No.

A ball anvil can be supplied if required, at extra cost. When ordering, add B to catalogue No. Rolling mill micrometers with a capacity greater than 1" are manufactured to your request.

English calibrations can be supplied reading .0001" at extra cost. Add V to catalogue No.

ENGLISH: .0005" graduations

| Cat. No. | Capacity | Depth of frame |
|----------|----------|----------------|
| 333 | 0-1" | 3" |
| 336 | 0-1" | 6" |
| 339 | 0-1" | 9" |

METRIC: .01 mm. graduations

| Cat. No. | Capacity | Depth of frame |
|----------|----------|----------------|
| 333M | 0-25 mm. | 3" |
| 336M | 0-25 mm. | 6" |
| 339M | 0-25 mm. | 9" |



VEE BLOCK MICROMETERS



These instruments have been designed for the accurate measurement of three-, five- and seven-flute drills, taps, reamers, etc. They eliminate the need for ring gauges and other costly and doubtful methods of measuring. They are particularly useful for measuring spherical objects such as steel balls.

The Vee Blocks are accurately ground and lapped.

ENGLISH: ·001" graduations METRIC: 01 mm. graduations

3 FLUTE

| Cat. No. | Capacity | Cat. No. | Capacity |
|----------|---------------------------------|----------|------------|
| 350 | $\frac{1}{6}$ - $\frac{1}{2}$ " | 350M | 2- 13 mm. |
| 351 | $\frac{1}{2}$ - 1" | 351M | 13- 25 mm. |
| 352 | 1 - $1\frac{1}{2}$ " | 352M | 25- 38 mm. |
| 353 | $1\frac{1}{2}$ - 2" | 353M | 38- 50 mm. |
| 354 | 2 - $2\frac{1}{2}$ " | 354M | 50- 63 mm. |
| 355 | $2\frac{1}{2}$ - 3" | 355M | 63- 75 mm. |
| 356 | 3 - $3\frac{1}{2}$ " | 356M | 75- 88 mm. |
| 357 | $3\frac{1}{2}$ - 4" | 357M | 88-100 mm. |

5 FLUTE

| | | | |
|-------|--------------------|--------|------------|
| 5/351 | $\frac{1}{8}$ - 1" | 5/351M | 4- 25 mm. |
| 5/352 | 1 - 2" | 5/352M | 25- 50 mm. |
| 5/353 | 2 - 3" | 5/353M | 50- 75 mm. |
| 5/354 | 3 - 4" | 5/354M | 75-100 mm. |

7 FLUTE

| | | | |
|-------|--------------------|--------|------------|
| 7/351 | $\frac{1}{8}$ - 1" | 7/351M | 4- 25 mm. |
| 7/352 | 1 - 2" | 7/352M | 25- 50 mm. |
| 7/353 | 2 - 3" | 7/353M | 50- 75 mm. |
| 7/354 | 3 - 4" | 7/354M | 75-100 mm. |

END MEASURING MICROMETER SETS for jig boring machines, universal milling machines, etc.



Catalogue No. 600. The set consists of two micrometer heads and a series of rods: two off each 1", 2", 3" and 6", and one 12" rod. The set is supplied in a fitted wooden case.

These micrometers have a 1" spindle movement and are graduated to ·0001"

The rods are of non-shrinking material, hardened and lapped flat-ended to an accuracy of within ·00005" in length. The movement of the micrometer heads is within the same limit of accuracy.

Location diameter of the micrometer heads and rods is ·625". Corresponding metric sizes can be supplied. Special sets will be quoted on request.

HUB MICROMETERS

This micrometer has a very narrow frame and is designed to pass through a 1" diameter hole. English calibrations can be supplied reading .0001" at extra cost. Add V to Catalogue No.



ENGLISH :

| | |
|--------------------|----------|
| .0005" graduations | |
| Cat. No. | Capacity |
| 360 | 0-1" |
| 361 | 1-2" |
| 362 | 2-3" |
| 363 | 3-4" |

METRIC :

| | |
|---------------------|------------|
| .01 mm. graduations | |
| Cat. No. | Capacity |
| 360M | 0- 25 mm. |
| 361M | 25- 50 mm. |
| 362M | 50- 75 mm. |
| 363M | 75-100 mm |

TURBINE WEARDOWN GAUGES

These micrometers are intended primarily for measuring the weardown of turbine bearings. A wide variety of designs and capacities can be supplied. Each gauge is supplied in a polished wooden case.



SPECIAL FEATURES

Tungsten carbide tips

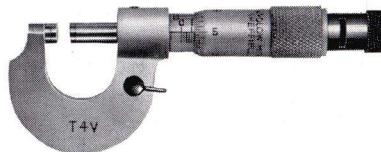
The following micrometers can be supplied with tungsten carbide tips at extra cost:

Point anvil and spindle micrometers.

Spline anvil and spindle micrometers.

Ball anvil and spindle micrometers.

When ordering, add T before catalogue No.



Large thimbles

Any of these micrometers, 1" and over, can be supplied with a $\frac{3}{4}$ " diameter thimble at extra cost.

When ordering add E before catalogue No.



SHARDLOW MICROMETERS

INTERNAL MICROMETERS

Capacities from 1 to 12"

ENGLISH: .0005" graduations

Cat. No. Capacity

440 1-2"

.25" movement of screw. .25" distance piece.
One extension rod and auxiliary handle.

Cat. No. Capacity

441 1-3"

.25" movement of screw. .25" distance piece.
Three extension rods and auxiliary handle.

Cat. No. Capacity

442 2-6"

.5" movement of screw. .5" distance piece.
Three extension rods and auxiliary handle.

Cat. No. Capacity

443 2-8"

.5" movement of screw. .5" distance
piece. Five extension rods and auxiliary
handle.

Cat. No. Capacity

444 2-12"

.5" movement of screw. .5" distance
piece. Nine extension rods and auxiliary
handle.

The Shardlow internal micrometer consists of a measuring head, extension rods, spacing collars and in the ranges covering 1"—12" (25—300 mm.) an auxiliary handle. They are of a strong robust construction, yet are light and easy to handle. The anvils are radially ground and lapped after hardening. Each rod is provided with an adjustment for wear and conforms to B.S. 959 for accuracy and rigidity. Supplied in a velvet lined leatherette case. Graduated parts are matt chrome plated.



INTERNAL MICROMETERS

Capacities from 8 to 72"

ENGLISH: .0005" graduations

Cat. No. Capacity

445 8-32"

1" movement of screw. One 1" and two 2"
distance pieces. Three extension rods.

Cat. No. Capacity

446 12-36"

1" movement of screw. One 1" and two 2"
distance pieces. Three extension rods.

Cat. No. Capacity

447 12-48"

1" movement of screw. One 1" and two 2"
distance pieces. Five extension rods.

Cat. No. Capacity

448 32-52"

1" movement of screw. Two 1" and one 2"
distance pieces. Three extension rods.

Cat. No. Capacity

449 36-56"

1" movement of screw. Two 1" and one 2"
distance pieces. Three extension rods.

Cat. No. Capacity

450 36-60"

1" movement of screw. One 1" and two 2"
distance pieces. Three extension rods.

Cat. No. Capacity

451 52-72"

1" movement of screw. Two 1" and one 2"
distance pieces. Three extension rods.

Of a strong robust construction, these instruments are light and easy to handle. The anvils are radially ground and lapped after hardening. Each rod is provided with an adjustment for wear, and conforms to B.S. 959 for accuracy and rigidity. Each micrometer is supplied in a wooden case. Graduated parts are matt chrome plated.



INTERNAL MICROMETERS

Capacities from 25 to 300 mm.

METRIC: .01 mm. graduations

Cat. No. Capacity

440M 25- 50 mm.

5 mm. movement of screw. 5 mm. distance piece. Two extension rods and auxiliary handle.

Cat. No. Capacity

441M 25- 75 mm.

5 mm. movement of screw. 5 mm. distance piece. Four extension rods and auxiliary handle.

Cat. No. Capacity

442M 50-150 mm.

13 mm. movement of screw. 12 mm. distance piece. Three extension rods and auxiliary handle.

Cat. No. Capacity

443M 50-200 mm.

13 mm. movement of screw. 12 mm. distance piece. Five extension rods and auxiliary handle.

Cat. No. Capacity

444M 50-300 mm.

13 mm. movement of screw. 12 mm. distance piece. Nine extension rods and auxiliary handle.

Of a strong robust construction, these instruments are light and easy to handle. The anvils are radially ground and lapped after hardening. Each rod is provided with an adjustment for wear, and conforms to B.S. 959 for accuracy and rigidity. Supplied in velvet lined leatherette case. Graduated parts are matt chrome plated.



INTERNAL MICROMETERS

Capacities from 200 to 1800 mm.

Of a strong robust construction, these instruments are light and easy to handle. The anvils are radially ground and lapped after hardening. Each rod is provided with an adjustment for wear and conforms to B.S. 959 for accuracy and rigidity. Supplied in a wooden case with hinged lid. Graduated parts are matt chrome plated.

METRIC: .01 mm. graduations

Description

25 mm. movement of screw. One 25 mm. and two 50 mm. distance pieces. Three extension rods.

25 mm. movement of screw. One 25 mm. and two 50 mm. distance pieces. Three extension rods.

25 mm. movement of screw. One 25 mm. and two 50 mm. distance pieces. Five extension rods.

25 mm. movement of screw. Two 25 mm. and one 50 mm. distance pieces. Three extension rods.

25 mm. movement of screw. Two 25 mm. and one 50 mm. distance pieces. Three extension rods.

25 mm. movement of screw. One 25 mm. and two 50 mm. distance pieces. Three extension rods.

25 mm. movement of screw. Two 25 mm. and one 50 mm. distance pieces. Three extension rods.

| Cat. No. | Capacity |
|----------|---------------|
| 445M | 200- 800 mm. |
| 446M | 300- 900 mm. |
| 447M | 300-1200 mm. |
| 448M | 800-1300 mm. |
| 449M | 900-1400 mm. |
| 450M | 900-1500 mm. |
| 451M | 1300-1800 mm. |



TUBULAR INTERNAL MICROMETERS

English Readings

ENGLISH: .0005" graduations

| Cat. No. | Capacity in. | Cat. No. | Capacity in. |
|----------|--------------|----------|--------------|
| 470 | 2- 2½ | 495 | 24-25 |
| 471 | 2½-3 | 496 | 25-26 |
| 472 | 3- 3½ | 497 | 26-27 |
| 473 | 3½-4 | 498 | 27-28 |
| 474 | 4- 4½ | 499 | 28-29 |
| 475 | 4½-5 | 500 | 29-30 |
| 476 | 5- 6 | 501 | 30-31 |
| 477 | 6- 7 | 502 | 31-32 |
| 478 | 7- 8 | 503 | 32-33 |
| 479 | 8- 9 | 504 | 33-34 |
| 480 | 9-10 | 505 | 34-35 |
| 481 | 10-11 | 506 | 35-36 |
| 482 | 11-12 | 507 | 36-37 |
| 483 | 12-13 | 508 | 37-38 |
| 484 | 13-14 | 509 | 38-39 |
| 485 | 14-15 | 510 | 39-40 |
| 486 | 15-16 | 511 | 40-41 |
| 487 | 16-17 | 512 | 41-42 |
| 488 | 17-18 | 513 | 42-43 |
| 489 | 18-19 | 514 | 43-44 |
| 490 | 19-20 | 515 | 44-45 |
| 491 | 20-21 | 516 | 45-46 |
| 492 | 21-22 | 517 | 46-47 |
| 493 | 22-23 | 518 | 47-48 |
| 494 | 23-24 | | |

These instruments are of tubular construction and are strong, light and easy to handle. For instruments up to 18", tubing of $\frac{1}{2}$ " diameter is used. $\frac{3}{4}$ " diameter tubing is used for instruments over 18". This ensures that the micrometers are rigid without being unduly heavy.

Measuring points are hardened, ground and lapped to a radius. Fibre grips are fitted, except on the two smallest instruments, to prevent expansion caused by the heat of the hand. An adjustment for wear is provided. The two smallest micrometers are supplied with auxiliary handles. These internal micrometers conform to B.S. 959. Graduated parts are matt chrome plated.

A set of thirteen instruments is available ranging from 2-12" in a wooden case. Catalogue No. 470/2.



TUBULAR INTERNAL MICROMETERS

Metric Readings

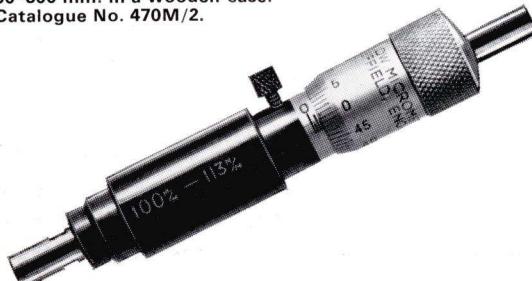
METRIC: .01 mm.

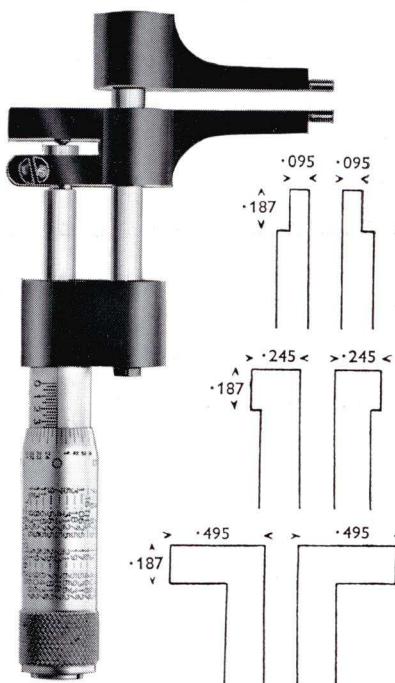
| Cat. No. | Capacity mm. | Cat. No. | Capacity mm. |
|----------|--------------|----------|--------------|
| 470M | 50- 63 | 495M | 600- 625 |
| 471M | 63- 75 | 496M | 625- 650 |
| 472M | 75- 88 | 497M | 650- 675 |
| 473M | 88-100 | 498M | 675- 700 |
| 474M | 100-113 | 499M | 700- 725 |
| 475M | 113-125 | 500M | 725- 750 |
| 476M | 125-150 | 501M | 750- 775 |
| 477M | 150-175 | 502M | 775- 800 |
| 478M | 175-200 | 503M | 800- 825 |
| 479M | 200-225 | 504M | 825- 850 |
| 480M | 225-250 | 505M | 850- 875 |
| 481M | 250-275 | 506M | 875- 900 |
| 482M | 275-300 | 507M | 900- 925 |
| 483M | 300-325 | 508M | 925- 950 |
| 484M | 325-350 | 509M | 950- 975 |
| 485M | 350-375 | 510M | 975-1000 |
| 486M | 375-400 | 511M | 1000-1025 |
| 487M | 400-425 | 512M | 1025-1050 |
| 488M | 425-450 | 513M | 1050-1075 |
| 489M | 450-475 | 514M | 1075-1100 |
| 490M | 475-500 | 515M | 1100-1125 |
| 491M | 500-525 | 516M | 1125-1150 |
| 492M | 525-550 | 517M | 1150-1175 |
| 493M | 550-575 | 518M | 1175-1200 |
| 494M | 575-600 | | |

These instruments are of tubular construction and are strong, light and easy to handle. For instruments up to 450 mm., tubing of $\frac{1}{2}$ " diameter is employed. $\frac{3}{4}$ " diameter tubing is used for instruments over 450 mm. This ensures that the micrometers are rigid without being unduly heavy.

Measuring points are hardened, ground and lapped to a radius. Fibre grips are fitted, except on the two smallest instruments, to prevent expansion caused by the heat of the hand. An adjustment for wear is provided. The two smallest micrometers are supplied with auxiliary handles. Graduated parts are matt chrome plated.

A set of thirteen instruments is available, ranging from 50-300 mm. in a wooden case. Catalogue No. 470M/2.





INTERNAL MICROMETER CALIPERS

This highly successful instrument was developed to meet the demand for a micrometer to accurately measure small internal diameters. It has a hardened and thread-ground screw and a hardened and thread-ground plain spindle which eliminates the need for a keyway. The sliding jaw is lapped to ensure a good fit on the spindle. An adjustment for wear is provided.

This instrument is a great improvement on other micrometer calipers which have a keywayed spindle allowing sideplay of the measuring jaws.

On conventional micrometer calipers the reversed reading is confusing to the operator. Graduated parts are matt chrome plated.

English calibrations can be supplied reading .0001" at extra cost. Add V to catalogue No.

| ENGLISH: .0005" graduations | METRIC: .01 mm. graduations |
|-----------------------------|-----------------------------|
| Cat. No. | Capacity |
| 530 | 0-2 1/2" |
| 531 | 3/4-1 1/4" |
| 532 | 1-2" |



DEPTH MICROMETERS

A dependable and practical instrument where precision depth measurement is required. The micrometer screw has a 1" (25 mm.) movement. The extension rods are $\frac{3}{16}$ " diameter, the contact faces being hardened, ground and lapped flat to the axis. Each rod has an adjustment for wear, and is easily and quickly inserted into the micrometer through a hole in the screw, being held in position by the thimble cap. Graduated parts are matt chrome plated. The base—which is made in two sizes, $2\frac{1}{2}$ " and 4"—is hardened, ground and lapped flat.

The 0-1" and 0-25 mm. range are supplied with a fixed .268" diameter rod.

Depth micrometers are supplied with a ratchet stop at additional cost. Add R to catalogue No. when ordering. Rod locking screws are offered at extra cost. Add L to catalogue No. Depth micrometers with a greater length of base are supplied on request.

ENGLISH: .0005" graduations

| Cat. No. | Capacity with $2\frac{1}{2}$ " base |
|----------|-------------------------------------|
| 410 | 0-1" |
| 412 | 0-3" |
| 414 | 0-6" |
| 415 | 0-9" |

Cat. No. Capacity with 4" base

| Cat. No. | Capacity with 4" base |
|----------|-----------------------|
| 420 | 0-1" |
| 422 | 0-3" |
| 424 | 0-6" |
| 425 | 0-9" |
| 426 | 0-12" |

METRIC: .01 graduations

| Cat. No. | Capacity with 4" base |
|----------|-----------------------|
| 410M | 0-25 mm. |
| 412M | 0-75 mm. |
| 414M | 0-150 mm. |
| 415M | 0-225 mm. |

Cat. No. Capacity with 4" base

| Cat. No. | Capacity with 4" base |
|----------|-----------------------|
| 420M | 0- 25 mm. |
| 422M | 0- 75 mm. |
| 424M | 0-150 mm. |
| 425M | 0-225 mm. |
| 426M | 0-300 mm. |

MICROMETER HEADS 0-1" 0-13 mm.

These instruments are designed to be incorporated in special gauges, fixtures or machines, for fine measurements and adjustment. They conform to the relevant B.S. specifications. Graduated parts are matt chrome plated.



| ENGLISH | METRIC | ENGLISH | METRIC | Capacity | Description |
|----------|----------|----------|----------|----------|---|
| Cat. No. | Capacity | Cat. No. | Capacity | 0-13 mm. | Ratchet and spindle lock screw. Reading .0005" (.01 mm.). |
| 379 | 0-1/2" | 379M | 0-13 mm. | 0-13 mm. | As 379 but with depth scale readings. |
| 379D | 0-1/2" | 379MD | 0-13 mm. | 0-13 mm. | As 379 but with left hand readings. |
| 379L | 0-1/2" | 379ML | 0-13 mm. | 0-13 mm. | As 379 but with .0001" readings. |
| 379V | 0-1/2" | — | — | — | As 379 but with .0005" (.01 mm.). |
| 380 | 0-1/2" | 380M | 0-13 mm. | 0-13 mm. | As 380 but with depth scale readings. |
| 380D | 0-1/2" | 380MD | 0-13 mm. | 0-13 mm. | As 380 but with left hand readings. |
| 380L | 0-1/2" | 380ML | 0-13 mm. | 0-13 mm. | As 380 but with .0001" readings. |
| 380V | 0-1/2" | — | — | — | As 380 but with .0005" (.01 mm.). |

MICROMETER HEADS 0-1" 0-25 mm.

The locating shank or boss is $\frac{13}{32}$ " diameter by $\frac{3}{4}$ " long. The spindle projects $1\frac{1}{8}$ " when in the zero position. Supplied with tungsten carbide tips if required, at extra cost. Add T before catalogue No. when ordering. Special heads can be made to your requirements.



| ENGLISH | METRIC | ENGLISH | METRIC | Capacity | Description |
|----------|----------|----------|----------|----------|---|
| Cat. No. | Capacity | Cat. No. | Capacity | 0-25 mm. | Reading .0005" (.01 mm.). |
| 381 | 0-1" | 381M | 0-25 mm. | 0-25 mm. | As 381 but with depth scale reading |
| 381D | 0-1" | 381MD | 0-25 mm. | 0-25 mm. | As 381 but with left hand reading. |
| 381L | 0-1" | 381ML | 0-25 mm. | 0-25 mm. | As 381 but with .0001" reading |
| 381V | 0-1" | — | — | — | As 381 but with .0005" (.01 mm.). |
| 382 | 0-1" | 382M | 0-25 mm. | 0-25 mm. | Ratchet and spindle lock screw. Reading .0005" (.01 mm.). |
| 382D | 0-1" | 382MD | 0-25 mm. | 0-25 mm. | As 382 but with depth scale reading. |
| 382L | 0-1" | 382ML | 0-25 mm. | 0-25 mm. | As 382 but with left hand reading. |
| 382V | 0-1" | — | — | — | As 382 but with .0001" reading. |

MICROMETER HEADS 0-2" 0-50 mm.

The locating shank or boss is $\frac{13}{32}$ " diameter by $\frac{3}{4}$ " long. The spindle projects $2\frac{1}{8}$ " when in the zero position. These Micrometer Heads are similar to Nos. 381 and 382.

| ENGLISH | METRIC | ENGLISH | METRIC | Capacity | Description |
|----------|----------|----------|----------|----------|---|
| Cat. No. | Capacity | Cat. No. | Capacity | 0-50 mm. | Reading .0005" (.01 mm.). |
| 3812 | 0-2" | 3812M | 0-50 mm. | 0-50 mm. | As 3812 but with depth scale reading. |
| 3812D | 0-2" | 3812MD | 0-50 mm. | 0-50 mm. | As 3812 but with left hand reading. |
| 3812L | 0-2" | 3812ML | 0-50 mm. | 0-50 mm. | As 3812 but with .0001" reading |
| 3822 | 0-2" | 3822M | 0-50 mm. | 0-50 mm. | Ratchet and spindle lock screw. Reading .0005" (.01 mm.). |
| 3822D | 0-2" | 3822MD | 0-50 mm. | 0-50 mm. | As 3822 but with depth scale reading. |
| 3822L | 0-2" | 3822ML | 0-50 mm. | 0-50 mm. | As 3822 but with left hand reading. |

MICROMETER HEADS

with large thimbles

No. 383:

The locating shank or boss is $\frac{3}{4}$ " diameter by $\frac{3}{4}$ " long. The thimble diameter is $1\frac{5}{8}$ " and the spindle diameter is .268". The spindle projects $1\frac{1}{4}$ " when in the zero position.

No. 402:

The locating shank or boss is $\frac{1}{2}$ " diameter by $\frac{3}{4}$ " long. The thimble diameter is 2" and the spindle diameter is .268". The spindle projects $1\frac{1}{4}$ " when in the zero position.

No. 403:

The locating shank or boss is $\frac{1}{2}$ " diameter by $\frac{3}{4}$ " long. The thimble diameter is 3" and the spindle diameter is .268". The spindle projects $1\frac{1}{4}$ " when in the zero position.

No. 404:

The locating shank or boss is $\frac{1}{2}$ " diameter by $\frac{3}{4}$ " long. The thimble diameter is $2\frac{5}{8}$ " and the spindle diameter is .268". The spindle projects $1\frac{1}{4}$ " when in the zero position.

Supplied with tungsten carbide tips at extra cost.
Add T before catalogue No. Special heads can be made to your requirements. Micrometer heads with non-rotating spindles can be supplied.



| ENGLISH: | | METRIC: | | |
|----------|----------|----------|----------|--------------------------------------|
| Cat. No. | Capacity | Cat. No. | Capacity | Description |
| 383 | 0-1" | 383M | 0-25 mm. | Reading .0005" (.01 mm.) |
| 383D | 0-1" | 383DM | 0-25 mm. | As 383 but with depth scale reading. |
| 383L | 0-1" | 383ML | 0-25 mm. | As 383 but with left hand reading. |
| 383V | 0-1" | — | — | As 383 but with .0001" reading. |
| 402 | 0-1" | 402M | 0-25 mm. | Reading direct to .0001" (.002 mm.). |
| 4022 | 0-2" | 4022M | 0-25 mm. | Reading direct to .0001" (.002 mm.). |
| 403 | 0-1" | 403M | 0-25 mm. | Reading direct to .0001" (.002 mm.). |
| 404 | 0-1" | 404M | 0-25 mm. | Reading direct to .0001" (.002 mm.). |

SHARDLOW MICROMETERS

SAVE TIME AND MONEY WITH SHARDLOW-IMICRO

- High degree of accuracy—simple and rapid to use.
- No parts to be changed—always ready to use.
- Economical—measuring instead of comparing saves time, eliminates rejects. Several operators can use the instruments of any one set at the same time.
- Two or three setting rings only are required for the complete range of each set. These give an easy check on the wear of the feeler bolts. Compensation for wear and resetting are the work of a moment.
- Recessed bores can be measured, depending on size of recess.
- An extension is provided for deep bores—extension does not affect accuracy.
- Normal changes of temperature due to hand heat do not influence the reading.
- Eliminates plug gauges.
- Suitable for measuring threaded bores.
- Because of its robust construction and the simplicity of its operation the Shardlow-Imicro can be used with confidence by the semi-skilled operator.



UNMATCHED FOR ACCURACY— UNRIVALLED FOR EASE OF OPERATION

Internal measurement has always presented problems. Two-point internal micrometers require special skill in finding true centres and takes time on small diameters while plug gauges are subject to rapid wear, need constant checking and only compare instead of measuring directly. The Shardlow-Imicro answers the definite need for a direct measuring instrument of high precision and robust construction which is adjustable for wear.

Threaded cone

A hardened thread-ground conic spiral is the heart of the Shardlow-Imicro. Three feeler bolts are held in constant contact with the cone by means of return springs. The spiral of the feeler bolts is ground at right angles to the cone axis to eliminate side thrust and reduce friction. A spindle connects the cone to a thimble, rotation of which causes the feeler bolts to contact the wall being measured. The cone is advanced by a displacement thread of equal pitch on its parallel portion. This reduces wear of the cone. All measuring parts are precision ground and made of non-shrinking wear-resistant steel, specially treated for long life.

Direct measuring

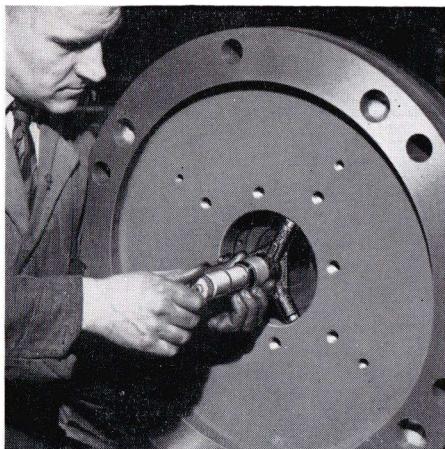
As the thimble is integral with the cone through the spindle, no transmission parts, such as micrometer screws, are necessary—making the instrument a direct measuring one. The cylindrically ground contact faces of the feelers are spaced at 120 degrees so that the instrument is self-centred and self-aligned and uses the maximum centring force.

The Shardlow-Imicro contacts the bore not at three points but on three lines. Because of the line contact it always finds the correct measuring position and the longitudinal vibrations caused by the ratchet stop will automatically cause it to make a firm contact with the walls of the bore.



Measurement of holes and bores

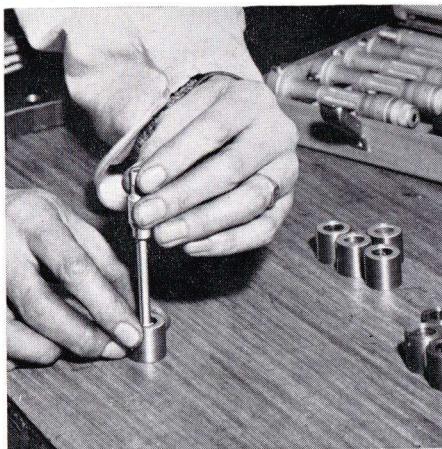
Supplied with each set, a simple extension allows the measurement of deep bores and holes. The extension, even when several units are coupled together, does not influence the accuracy of the instrument. Recessed bores can be measured with standard or specially adapted instruments, depending on the depth and width of the recess.



The ease of rapid, repeated and accurate measurement of the workpiece in the machine tool saves time and rejects and avoids faulty workmanship.



The extension allows measurement in deep bores. The Shardlow-Imicro measures accurately without the need of shaking or swinging it into the bore.



Shardlow-Imicro is ideal for rapid and production inspection. A single instrument can be used for bores of various sizes, replacing a large number of plug gauges.



In quantity production the operator is able to detect any tool wear and take immediate steps.

INDIVIDUAL INSTRUMENTS AND ACCESSORIES

ENGLISH: graduations

| | |
|-------|-------------------------------|
| 1911 | ·275—·350" |
| 1912 | ·350—·425" |
| 1913 | ·425—·500" |
| 1914 | ·350" dia. setting ring |
| 1915 | ·425" dia. setting ring |
| 1916 | Extension rod |
| 1917 | Individual case |
| 1921 | ·500—·600" |
| 1922 | ·600—·700" |
| 1923 | ·700—·800" |
| 1924 | ·500" dia. setting ring |
| 1925 | ·700" dia. setting ring |
| 1926 | Extension rod |
| 1927 | Individual case |
| 1931 | ·800—1·000" |
| 1932 | 1·000—1·200" |
| 1933 | 1·200—1·400" |
| 1934 | 1·400—1·600" |
| 1935 | 1·000" dia. setting ring |
| 1936 | 1·400" dia. setting ring |
| 1937 | Extension rod |
| 1938 | Individual case |
| 1941 | 1·600—2·000" |
| 1942 | 2·000—2·400" |
| 1943 | 2·400—2·800" |
| 1944 | 2·800—3·200" |
| 1945 | 3·200—3·600" |
| 1946 | 3·600—4·000" |
| 1947 | 2·000" dia. setting ring |
| 1948 | 2·800" dia. setting ring |
| 1949 | 3·600" dia. setting ring |
| 1950 | Extension rod |
| 1950A | Individual case |
| 1951 | 4·000—5·000" |
| 1952 | 5·000—6·000" |
| 1953 | 6·000—7·000" |
| 1954 | 7·000—8·000" |
| 1955 | 5·000" dia. setting ring |
| 1956 | 7·000" dia. setting ring |
| 1957 | Extension rod |
| 1958 | Individual case |
| 1961 | 8·000—9·000" |
| 1962 | 9·000—10·000" |
| 1963 | 10·000—11·000" |
| 1964 | 11·000—12·000" |
| 1965 | 9" dia. setting frame |
| 1966 | 11" dia. setting frame |
| 1967 | 9" and 11" dia. setting frame |
| 1968 | Extension rod |
| 1969 | Individual case |

METRIC: graduations

| | |
|------|------------------------------------|
| 911 | 6— 8 mm. |
| 912 | 8—10 mm. |
| 913 | 10—12 mm. |
| 914 | 8 mm. dia. setting ring |
| 915 | 10 mm. dia. setting ring |
| 916 | Extension rod |
| 917 | Individual case |
| 921 | 11—14 mm. |
| 922 | 14—17 mm. |
| 923 | 17—20 mm. |
| 924 | 11 mm. dia. setting ring |
| 925 | 17 mm. dia. setting ring |
| 926 | Extension rod |
| 927 | Individual case |
| 931 | 20—25 mm. |
| 932 | 25—30 mm. |
| 933 | 30—35 mm. |
| 934 | 35—40 mm. |
| 935 | 25 mm. dia. setting ring |
| 936 | 35 mm. dia. setting ring |
| 937 | Extension rod |
| 938 | Individual case |
| 941 | 40— 50 mm. |
| 942 | 50— 60 mm. |
| 943 | 60— 70 mm. |
| 944 | 70— 80 mm. |
| 945 | 80— 90 mm. |
| 946 | 90—100 mm. |
| 947 | 50 mm. dia. setting ring |
| 948 | 70 mm. dia. setting ring |
| 949 | 90 mm. dia. setting ring |
| 950 | Extension rod |
| 950A | Individual case |
| 951 | 100—125 mm. |
| 952 | 125—150 mm. |
| 953 | 150—175 mm. |
| 954 | 175—200 mm. |
| 955 | 125 mm. dia. setting ring |
| 956 | 175 mm. dia. setting ring |
| 957 | Extension rod |
| 958 | Individual case |
| 961 | 200—225 mm. |
| 962 | 225—250 mm. |
| 963 | 250—275 mm. |
| 964 | 275—300 mm. |
| 965 | 225 mm. dia. setting frame |
| 966 | 275 mm. dia. setting frame |
| 967 | 225 and 275 mm. dia. setting frame |
| 968 | Extension rod |
| 969 | Individual case |



BOXED SETS

ENGLISH: graduations

| Cat. No. | Range | Number of Instruments | Capacity of each instrument | Graduations |
|----------|--------------|-----------------------|-----------------------------|-------------|
| 1091 | .275—.500" | 3 | .075" | .0001" |
| 1092 | .500—.800" | 3 | .100" | .0002" |
| 1093 | .800—1.600" | 4 | .200" | .0002" |
| 1094 | 1.600—4.000" | 6 | .400" | .0002" |
| 1095 | 4.000—8.000" | 4 | 1.000" | .0005" |

Due to the wide spacing on the thimbles of sets 1092 to 1095, readings can be estimated to half a division, i.e. ".0001" on sets 1092 to 1094 and ".00025" on sets 1095.

METRIC: graduations

| Cat. No. | Range | Number of Instruments | Capacity of each instrument | Graduations |
|----------|-------------|-----------------------|-----------------------------|--------------------------|
| 91 | 6—12 mm. | 3 | 2 mm. | .001 mm. with vernier |
| 92 | 11—20 mm. | 3 | 3 mm. | .005 mm. |
| 93 | 20—40 mm. | 4 | 5 mm. | .005 mm. |
| 94 | 40—100 mm. | 6 | 10 mm. | .005 mm. |
| 95 | 100—200 mm. | 4 | 25 mm. | .01 mm. |



EXTENSION RODS FOR DEEP BORES

Deep and not readily accessible bores can be measured with the Shardlow-Imicro without influencing the accuracy. This table shows the depth to which bores can be measured with various extension rods. Special extensions will be quoted for on request.

| Set No. | 1091 | 1092 | 1093 | 1094 | 1095 |
|--|------------|------------|-------------|--------------|--------------|
| Range | .275—.500" | .500—.800" | .800—1.600" | 1.600—4.000" | 4.000—8.000" |
| Measuring depth without extension | | | | | |
| Measuring depth with 1 standard extension | 2" | 3" | 3" | 3" | 4" |
| Measuring depth with 2 standard extensions | 6" | 9" | 9" | 9" | 10" |
| Measuring depth with special extension rod 20" | 10" | 15" | 15" | 15" | 16" |
| Measuring depth with special extension rod 40" | — | — | 23" | 23" | 24" |
| | — | — | 43" | 43" | 44" |

USING THE SHARDLOW-IMICRO

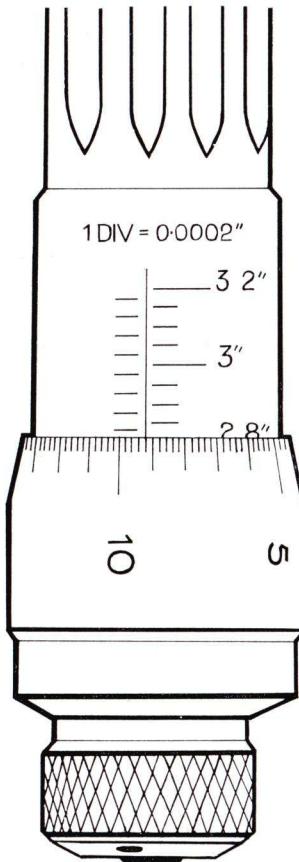
Setting rings are supplied with each set to check the instrument's accuracy. Re-setting of the instrument, as well as compensation for feeler bolt wear—which only occurs after long use—can be effected in a very simple manner.

In order to reduce effect of variations in different operators' touch, an ingenious ratchet arrangement limits the measuring pressure automatically. The ratchet arrangement also creates a slight vibration causing the maximum degree of contact between the feeler bolts and the bore.

The Shardlow-Imicro does not need to be moved to and fro in the bore, as is done with plug and other gauges. Hence the wear of the instrument is less and the instrument will continue to give good service over many years.

Easy to operate

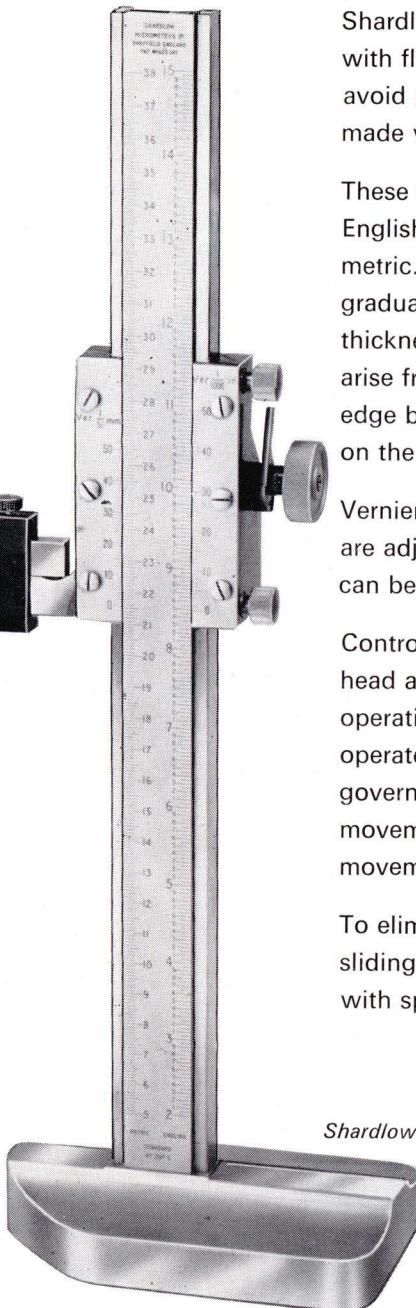
Operation of the Shardlow-Imicro is very simple. The instrument is introduced into the bore, the ratchet is turned until it disengages, and the reading can be made directly.



Reading the Shardlow-Imicro is straightforward. Example here is shown reading 2.8092".

SHARDLOW MICROMETERS

VERNIER HEIGHT GAUGES



Shardlow vernier height gauges are fitted with flush-fitting vernier scales to avoid parallax and allow rapid readings to be made with complete assurance.

These scales are 2·45" long on the English instrument, and 49 mm. on the metric. (On height gauges with a graduated bevelled edge there is always a thickness to the edge and errors in reading arise from the eye having to travel over this edge before meeting the graduations on the main scale).

Vernier scales for both English and Metric are adjustable. Accuracy of setting can be checked by the gauge block supplied.

Controls for the movement of the sliding head are grouped to facilitate easy operation and can be conveniently operated with one hand. A rack and pinion govern the coarse movement. Fine movement is governed by a worm movement.

To eliminate any side play of the sliding head, the clamping screws are fitted with spring loaded pads.

Shardlow height gauges conform to B.S. 1943.

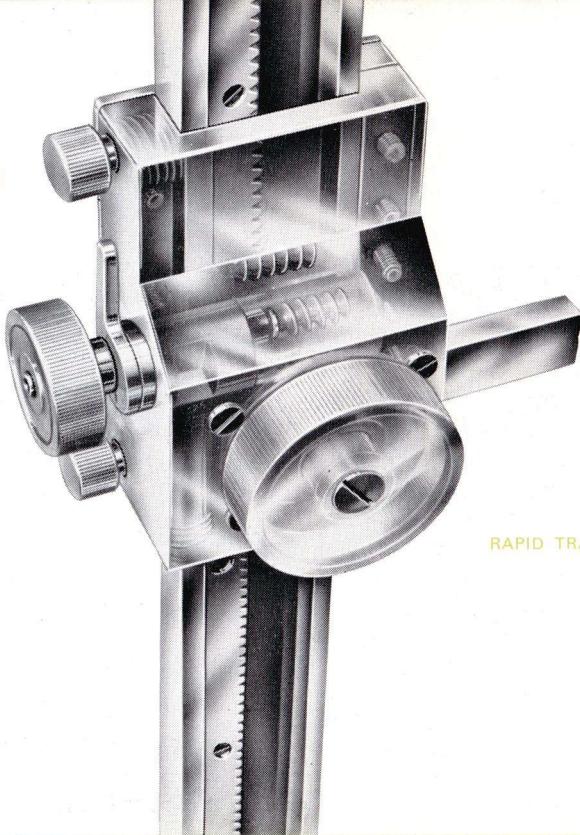
CLAMPING SCREWS
WITH SPRING LOADED PADS

LEVER FOR ENGAGING FINE
TRAVERSE

FINE SETTING CONTROL

CLAMPING SCREWS WITH
SPRING LOADED PADS

RAPID TRAVERSE KNOB



VERNIER HEIGHT GAUGES

Flush fitting vernier scales to eliminate parallax and avoid errors of setting and reading.

Sliding vernier head has rapid traverse with geared fine movement for final setting.

Exceptionally clear graduations and matt chrome finish ensure easy accurate reading under all lighting conditions.

Range

| | ENGLISH : | METRIC : |
|-------|-------------------|---------------------|
| Model | ·001" graduations | ·02 mm. graduations |
| 1000 | 12" | 320 mm. |
| 1001 | 18" | 470 mm. |
| 1002 | 24" | 640 mm. |
| 1003 | 36" | 920 mm. |

Additional accessories for clamping of indicators and an offset scribe can be provided at extra cost.

Shardlow 12" height gauges are supplied in a velvet-lined leatherette case; 18", 24", and 36" instruments are supplied in a robust, hinged-lid wooden case.

Each is furnished with a scribe, a hardened rod for depth measurements and a 2" gauge block for checking purposes.

SHARDLOW MICROMETERS

EDUCATIONAL AIDS

How to read micrometers

an introduction to precision measuring instruments



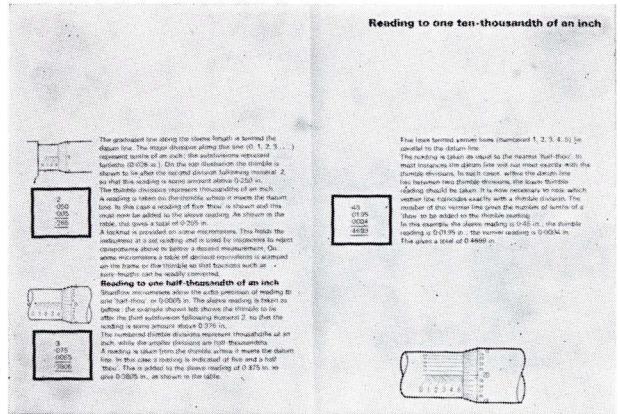
How to read micrometers

This attractive booklet fills the long-felt need for a comprehensive introduction to the use of precision measuring instruments. The straightforward text is backed by clear illustrations and covers micrometers, height gauges, vernier protractors, etc. Available free by return of post. Copies are offered in quantity to teachers and instructors.

Wallchart

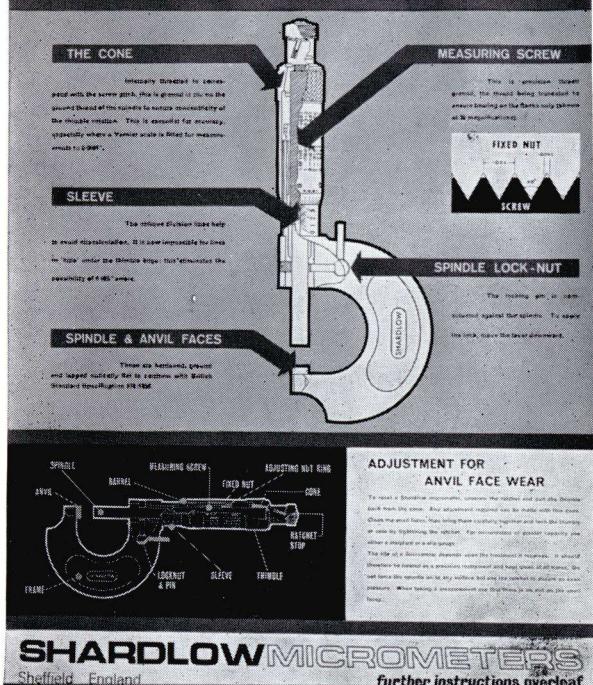
This instructive wallchart shows the construction and operation of the micrometer while the reverse side explains in plain English how to read a micrometer to one 'thou', half a 'thou' and to one tenth of a 'thou'. Available free by return of post to teachers and instructors.

Reading to one ten-thousandth of an inch



SHARDLOW MICROMETERS

instruction sheet



SHARDLOW MICROMETERS

P.O. Box 62, Petre Street Sheffield 4. Phone: 386951. Grams: "Micrometers", Sheffield
SM/6

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